



DATE

29th MARCH 2017 (WEDNESDAY)

VENUE

PERDANA HALL

NATIONAL SPORTS INSTITUTE OF MALAYSIA

BUKIT JALIL, KUALA LUMPUR

INVITED SPEAKER:

Dr. Saro Farra, Senior Physiologist Division of Podium, National Sports Institute.

TOPICS:

1) THE RATE OF PHYSIOLOGICAL STRAIN DEVELOPMENT AND ITS INFLUENCE ON EXERCISE-INDUCED FATIGUE

Background: Arterial desaturation impairs exercise performance in a dose dependent manner. However, new theories of exercise-induced fatigue suggest that increasing rates of arterial deoxygenation augment the fatigue response during exercise.

Purpose: To clarify if self-selected exercise intensity, while exercising at a constant Rating of Perceived Exerction (RPE) is sensitive to alterations in the absolute arterial saturation (SpO_2) and/or the rate of change in SpO_2 .

Methods: Subject performed constant RPE exercise for 30 min. They were instructed to adjust their exercise intensity during the trial to maintain their RPE at 5 on Borg's 10-point scale. Subjects engaged in continuous, bilateral, isokinetic cycling (Study 2) and intermittent, unilateral, isometric knee-extension (Study 3). The fraction of inspired oxygen (FIO_2) was reduced to desaturate arterial blood from starting values ($>98\%$) to 70%. This desaturation occurred linearly over three target time periods (FAST, 5 min; 15 min; SLOW, 25min).

Result: The rate of arterial desaturation was significantly different between each of the three conditions in both studies. During cycling exercise (Study 2), power output (PO) (FAST = $2.8 \pm 2.1 W \cdot \%S_pO_2^{-1}$; MED = $2.5 \pm 1.8 W \cdot \%S_pO_2^{-1}$;

SLOW = $1.8 \pm 1.6 \text{ W} \cdot \% \text{S}_p\text{O}_2^{-1}$; $P < 0.001$) and surface electromyography (sEMG) of the vastus medialis (FAST = $1.3 \pm 0.6 \cdot \% \text{S}_p\text{O}_2^{-1}$; MED = $1.1 \pm 0.5 \cdot \% \text{S}_p\text{O}_2^{-1}$; SLOW = $0.7 \pm 0.7 \cdot \% \text{S}_p\text{O}_2^{-1}$; $P < 0.001$) decreased at significantly different rates. Post-hoc comparisons revealed that the rates of decline in PO and sEMG during FAST and MED were similar, and both were greater than SLOW. However, during isometric knee-extension (Study 3), the level of force production and sEMG remained similar across saturation levels.

Conclusion: These results confirm that decrease in absolute S_pO_2 impair self-selected exercise intensity and that faster desaturation rates magnify that impairment, but only when a large muscle mass is engaged. These findings suggest that the rate of arterial deoxygenation independently influences exercise performance and that the central depressant effect may be a function of the metabolic strain associated with hypoxia, rather than the hypoxia per se.

ABOUT THE SPEAKER:

Dr. Saro Farra has been safely pushing the limits of human performance for almost 20 years. During this time, he has dedicated his academic and professional pursuits to understanding the control mechanisms that limit human functional capacity and to developing innovative countermeasures that combat exercise-induced fatigue. He gained his PhD from The University of Toronto investigating the physiological and perceptual responses to acute exercise and various environmental stressors. He collaborated with several sport organizations in Canada, helping athletes realize their dreams of reaching the top of the World and Olympic podium. Dr. Farra is a published author who has been invited to speak at international events in Canada, China, and Malaysia.

INVITED SPEAKER:

Assoc. Prof. Dr. Ahmad Munir Che Muhamed, Lifestyle Science Cluster, Advanced Medical and Dental Institute, Universiti Sains Malaysia.

TOPICS:**1) PRACTICAL APPROACHES TO ENHANCE ENDURANCE EXERCISE PERFORMANCE IN A HOT-HUMID ENVIRONMENT**

The detrimental effect of environmental heat stress on endurance exercise performance has been well documented. Numerous studies have suggested that the progressive rise in body temperature during exercise to a level referred to as critical core temperature as the main limiting factor. In addition, it has also been widely recognized that increasing cardiovascular resulting from the maintenance of high skin blood flow is another limiting factor. Thus, the underlying mechanisms responsible for limiting exercise performance in a heat stress environment remains inconclusive. In a hot-humid environment, a reduce rate of heat dissipation from the skin surface to the environment would lead to a decline in sweating efficiency and increased area of skin wettedness. Several studies have shown that the endurance exercise capacity is reduced with rising relative humidity level.

This presentation will discuss some of the recent reports on the effect of relative humidity on exercise performance and the various practical recommendations to face the challenge of exercising in the hot-humid environment.

ABOUT THE SPEAKER:

Assoc. Prof. Dr Ahmad Munir Che Muhamed is a member of the Lifestyle Science Cluster, Advanced Medical and Dental Institute, Universiti Sains Malaysia. He is also the Head of the Exercise and Rehabilitation Section, Clinical Service Division at the Advanced Medical and Dental Institute, Universiti Sains Malaysia. He received his Bachelor and Master of Science Degree from Indiana State University in Exercise Science in 1994 and 1996, respectively. He completed his doctoral studies in Exercise and Sports Science at The University of Sydney in 2005. His primary research interest includes environmental exercise physiology where he had examined the influence of relative humidity in the development of heat stress and its effect on sports performance. In addition, Dr Munir had also examined circulatory and muscular physiological responses to exercise. He has presented his research findings in several national and international Scientific Conferences. A former national and intercollegiate athlete at Indiana State University, Dr Munir competed in Division I NCAA Men's Tennis competition for 4 years. Dr Munir remains active in consultancy work within the Government Agencies. He was previously the Chairman of National Coaching Board, Malaysia from 2009-2011.



TENTATIVE PROGRAMME

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| 9.00 am | Participant registration |
| 9.25 am | Welcome speech |
| 9.30 am | Topic: THE RATE OF PHYSIOLOGICAL STRAIN DEVELOPMENT AND ITS INFLUENCE ON EXERCISE-INDUCED FATIGUE by Dr. Saro Farra |
| 10.30 am | Break |
| 11.00 am | Topic: PRACTICAL APPROACHES TO ENHANCE ENDURANCE EXERCISE PERFORMANCE IN A HOT-HUMID ENVIRONMENT by Assoc Prof Dr. Ahmad Munir Che Muhamed |
| 12.00 pm | End |



FAQ:

Who can participate?

- Everyone in the sports field, i.e. sports scientists / officers / practitioners / physicians, academicians, administrators, students, coaches, athletes

How do I register?

- Do register online at www.isn.gov.my

How much do I have to pay?

- **RM10 Student IPTA/IPTS** **RM30 Others**

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